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**Patent and Trademark Office**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/050,113 03/30/98 EMA

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EXAMINER

MMC2/0213

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ART UNIT

PAPER NUMBER

2815

DATE MAILED:

02/13/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

**Office Action Summary**

Application No.

09/050,113

Applicant(s)

EMA, TAIJI

Examiner

Matthew E. Warren

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 November 2000.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14, 36 and 37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-14, and 37 is/are rejected.
- 7) ☒ Claim(s) 1, 4, and 36 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

**Attachment(s)**

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the amendment filed on November 29, 2000.

#### ***Claim Objections***

Claims 1, 4, and 36 are objected to because of the following informalities:

In claim 1, line 5, "covering an each upper" should be "covering each upper". In claim 1, line 7, "contract" should be "contact." In claim 36, line 8, "insulation firm" should be "insulation film." In claim 36, line 11, "sidewall is of" should be "sidewall of."

Appropriate correction is required. Please keep in mind that it is the duty of the applicant to make sure that the claims are free of errors.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9-11, 13 and 37 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not show support for the limitation that the contact hole has a second width which is the same as a width subtracted twice a width of the sidewall insulation film from the

space between the adjacent conductor patterns/wordlines/bitlines at the bottom of the contact hole.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 3, 5-8, 12, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims state that a first insulation film fills spaces between the conductor patterns and does not extend over the etching stopper film. However, the specification and drawings disclose that the first insulation film is not present between the two adjacent conductor patterns because of the contact hole. Furthermore, the specification and drawings disclose that the first insulation film does extend over the etching stopper film. It extends above the film and beyond the etching stopper film where the contact hole is not present.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 3, and 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi (JP 08037181 A).

Hiroshi discloses (abstract and figure) a semiconductor device in which a first conducting film (5) of a gate electrode is formed on a substrate. An etch stop layer of silicon nitride (6) is formed on a gate electrode. A first insulating film is formed over the etch stop layer and a contact hole (9) is formed in the insulating film between two gate structures. The hole reaches the base substrate. The contact hole has an end defined by the conductor patterns. A sidewall insulation film is formed on an inner wall of the insulation film, on the side of the gate conductor patterns, and on the side of the etch stopper film. The sidewall insulation film, the first insulation film, or both cover the walls of the conductor patterns.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-14, and 37 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi (JP 08037181 A).

Hiroshi discloses (abstract and figure) a semiconductor device in which a first conducting film (5) of a gate electrode is formed on a substrate. An etch stop layer of silicon nitride (6) is formed on a gate electrode. A first insulating film is formed over the etch stop layer and a contact hole (9) is formed in the insulating film between two gate

structures. The hole reaches the base substrate. The contact hole has an end defined by the conductor patterns. A sidewall insulation film is formed on an inner wall of the insulation film, on the side of the gate conductor patterns, and on the side of the etch stopper film. Although Hiroshi shows that the sidewall insulation film is formed only one of the gate structures, it would be obvious to one of ordinary skill in the art to form the same structure on another gate structure if needed. It has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the semiconductor of Hiroshi by forming a sidewall film on both gate electrodes because such an improvement only involves routine skill in the art.

### ***Allowable Subject Matter***

Claims 1 and 36 contain allowable subject matter. The prior art references do not show a sidewall insulation film formed on inner walls of the first insulation film, each sidewall of the two conductor patterns, and each side wall of the etching stopper film in the contact hole wherein each of the etching stopper films is completely covered by the first insulation film and the respective sidewall insulation films.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (703) 305-0760. The examiner can normally be reached on Mon-Thurs, and alternating Fri, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 308-7722 for After Final communications.

MEW

February 11, 2001



**EDDIE C. LEE**  
**PRIMARY EXAMINER**